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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/764,524	01/27/2004	Tohru Ikeda	00862.023420.	9965
5514 7590 05/02/2007 FITZPATRICK CELLA HARPER & SCINTO 30 ROCKEFELLER PLAZA NEW YORK, NY 10112			EXAMINER ZHU, RICHARD Z	
			ART UNIT 2609	PAPER NUMBER
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/764,524

Applicant(s)

IKEDA, TOHRU

Examiner

Richard Z. Zhu

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 January 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. ____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 11/19/2004.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: ____.

DETAILED ACTION

Priority

1. Acknowledgment is made of applicant's claim for foreign priority based on an application JP 2003-022269 filed in Japan on January 30th of 2003. Certified copy of the Japanese Application had been received on February 24th of 2004.

Drawings

Figures 3-18 and 21 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the examiner does not accept the changes, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections - 37 CFR 1.75

2. The following is a quotation of 37 CFR 1.75(d)(1):

The claim or claims must conform to the invention as set forth in the remainder of the specification and the terms and phrases used in the claims must find clear support or antecedent basis in the description so that the meaning of the terms in the claims may be ascertainable by reference to the description.

3. Claim 3 is objected to under 37 CFR 1.75(d)(1) as failing to conform to the antecedent basis set forth by the specification. Claim 3 recites “calculating the difference between the plurality of output color-component items decided and the error correction data and adopting the difference as the error data.” The plurality of output color-component items decided being C_p , M_p , and Y_p as defined on Page 27, line 22 of applicant’s disclosure and the error correction data being $E(x,y) = 1/16 * E(x-l,y-l) + 5/16 * E(x,y-l) + 2/16 * E(x+l,y-l) + 8/16 * E(x-l,y)$ of applicant’s disclosure at Page 29, lines 17-18 whereas calculating the difference between the plurality of output color-component items decided and error correction data being $C_e = C_p - C_i$ ($C_p = C_e + C_i$), $M_e = M_p - M_i$ ($M_p = M_e + M_i$), and $Y_e = Y_p - Y_i$ ($Y_p = Y_e + Y_i$) on Page 27, lines 24-26 whereas C_p , M_p , and Y_p are output density data and they are clearly not the error correction data that is being claimed. Therefore Claim 3 failed to conform to the antecedent basis as set forth by the specification. Please amend the claim accordingly.

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Claim Rejections - 35 USC § 101

4. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

The USPTO “Interim Guidelines for Examination of Patent Applications for Patent Subject Matter Eligibility” (Official Gazette notice of 22 November 2005), Annex IV, reads as follows:

Descriptive material can be characterized as either "functional descriptive material" or "nonfunctional descriptive material." In this context, "functional descriptive material" consists of data structures and computer programs which impart functionality when employed as a computer component. (The definition of "data structure" is "a physical or logical relationship among data elements, designed to support specific data manipulation functions." The New IEEE Standard Dictionary of Electrical and Electronics Terms 308 (5th ed. 1993).) "Nonfunctional descriptive material" includes but is not limited to music, literary works and a compilation or mere arrangement of data.

When functional descriptive material is recorded on some computer-readable medium it becomes structurally and functionally interrelated to the medium and will be statutory in most cases since use of technology permits the function of the descriptive material to be realized. Compare *In re Lowry*, 32 F.3d 1579, 1583-84, 32 USPQ2d 1031, 1035 (Fed. Cir. 1994) (claim to data structure stored on a computer readable medium that increases computer efficiency held statutory) and *Warmerdam*, 33 F.3d at 1360-61, 31 USPQ2d at 1759 (claim to computer having a specific data structure stored in memory held statutory product-by-process claim) with *Warmerdam*, 33 F.3d at 1361, 31 USPQ2d at 1760 (claim to a data structure per se held nonstatutory).

In contrast, a claimed computer-readable medium encoded with a computer program is a computer element which defines structural and functional interrelationships between the computer program and the rest of the computer which permit the computer program's functionality to be realized, and is thus statutory. See *Lowry*, 32 F.3d at 1583-84, 32 USPQ2d at 1035.

5. Claim 8 is rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter as follows. Claim 8 defines a program for causing a computer to execute the image processing method set forth in claim 1 embodying functional descriptive material. However, the claim does not define a computer-readable medium or computer-readable memory and is thus non-statutory for that reason (i.e., “When functional descriptive material is recorded on some computer-readable medium it becomes structurally and functionally interrelated to the medium and will be statutory in most cases since use of technology permits the function of the descriptive material to be realized” – Guidelines

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Annex IV). The scope of the presently claimed invention encompasses products that are not necessarily computer readable, and thus NOT able to impart any functionality of the recited program. The examiner suggests amending the claim(s) to embody the program on “computer-readable medium” or equivalent; assuming the specification does NOT define the computer readable medium as a “signal”, “carrier wave”, or “transmission medium” which are deemed non-statutory (refer to “note” below). Any amendment to the claim should be commensurate with its corresponding disclosure. Please combine Claim 8 with Claim 9 to make it statutory.

Claim Rejections - 35 USC § 112

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claim 3 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite or inconsistent for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 3 recites “adding error data to the plurality of items of color component data and adopting the sum as error correction data”; the “Error correction data” being $E(x,y) = 1/16 * E(x-1,y-1) + 5/16 * E(x,y-1) + 2/16 * E(x+1,y-1) + 8/16 * E(x-1,y)$ of applicant’s disclosure at Page 29, lines 17-18 whereas “adding error data to the plurality of items of color component data” is being interpreted as claiming the error diffusion method at Page 28, lines 17-21 and Page 29, lines 1-3 whereas color component data are C_i , M_i , and Y_i .

However, Claim 3 further recites “calculating the difference between the plurality of output color-component items decided and the error correction data and adopting the difference as the error data.” The plurality of output color-component items decided being C_p , M_p , and Y_p as defined in applicant’s disclosure at Page 27, lines 14-19, error data being C_e , M_e , and Y_e as disclosed on Page 27, line 20. This is where the claim is inconsistent with the specification because Page 27, lines 20-27 continued to define the color difference or error data as being $C_e = C_p - C_i$, $M_e = M_p - M_i$, and $Y_e = Y_p - Y_i$ whereas C_i , M_i , and Y_i are clearly not the error correction data as stated on Page 28, lines 17-21. It is unclear to the examiner whether or not if the claim is incorrectly written or if the claim is drawn to something that is not specified, or if the specification is incorrectly written.

MPEP 2173.03, Inconsistency Between Claims and Specification Disclosure or Prior Art, inasmuch as it relates to the “specification disclosure”, states:

“Although the terms of a claim may appear to be definite, inconsistency with the specification disclosure ... may make an otherwise definite claim take on an unreasonable degree of uncertainty. *In re Cohn*, 438 F.2d 989, 169 USPQ 95 (CCPA 1971); *In re Hammack*, 427 F.2d 1378, 166 USPQ 204 (CCPA 1970). In *Cohn*, the claim was directed to a process of treating a surface with a corroding solution until the metallic appearance is supplanted by an "opaque" appearance. Noting that no claim may be read apart from and independent of the supporting disclosure on which it is based, the court found that the description, definitions and examples set forth in the specification relating to the appearance of the surface after treatment were inherently inconsistent and rendered the claim indefinite.”

Commensurate with MPEP 2173.03, and given that no claim is read separately and apart from its corresponding specification disclosure, and given this inconsistency between the claimed requirements and the specification, claim 3 is indefinite because it is not clear how it should be interpreted. Should claim 3 be interpreted and amended to require that error data being the difference between output color-component data decided and color component data as described in the specification, or should the specification be amended to described error data being the difference between output color-component data decided and the error correction data as required by claim 3? Clarification of this question via appropriate amendment is suggested. Examination of this claim should be based on the disclosure at Page 27, lines 20-27 for this office action.

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. Claims 1-2, 4-6, and 7-9 are rejected under 35 USC 102(b) as being clearly anticipated by ***Yamada et al. (US 20020097456 A1)***.

Regarding Claims 1 and 7, ***Yamada et al.*** discloses an image processing method comprising the steps of and means for:

Inputting a plurality of items of color-component data representing an image (**Figure 2, the Host Device 51 and Image Output Device 52 and see Page 7, Paragraph 0125, image is printed using at least four color inks of Yellow, magenta, cyan and black**);

deciding a plurality of items of output color-component data (**Figure 4, Color Characteristic Conversion 33 and Halftoning 34; Figure 5, S4-S6 and see Page 7, Paragraph 0130 through Page 8, Paragraph 0133. Color Characteristic Conversion 33 and Halftoning 34 accomplishes the same function as Color Transformation Unit and Quantization Processing Unit respectively. The decision process is described via five different embodiments, and executed within Host Device 51) which represent an image reproduced by an output device (Figure 2, output device being Image Output Device 52), based upon the plurality of items of color-component data (Page 7, Paragraph 0125);**

outputting the plurality of items of output color-component data decided at said deciding step (**Figure 5, S9-S10**).

wherein in case of an image in a specific area in which an entered image is represented by at least two items of color-component data (**Figure 15, an image in a specific area being represented by Cyan and Magenta**), any one item of color-component data is decided as output color-component data at said deciding step (**Figure 15, areas b and d was decided to be printed with Cyan and areas c and f was decided to be printed with Magenta** whereas said decision process is described by Figure 14. See Page 20, Paragraph 0206-0207 and Page 21, 0217 and 0223 for Cyan and 0220 and 0229 for Magenta, for examples).

Regarding Claim 2, *Yamada et al.* discloses that the two items of color-component data are cyan and magenta color-component data (**Page 20, Paragraph 0201, thin/thick cyan ink and thin/thick magenta ink**), and the specific area is a high-contrast area (**Figure 15, areas b and d as high contrast for Cyan and areas c and f as high contrast area for Magenta**. The Applicant defined high contrast areas as areas where ILP or sum of distance of color space of input image data, preceding line pixels, and preceding pixel, are small; meaning the neighboring pixels are of the same color or colors that are the closest in color space. On Page 21, Paragraphs 0216-0222 of *Yamada et al* and the areas cited on Figure 15, the pixels in area b and d are all Cyan and c and f are all Magenta, therefore these area are high contrast areas and Yamada clearly teaches printing with only Cyan or Magenta ink under areas that are high contrast).

Regarding Claim 4, *Yamada et al.* discloses via five different embodiments, that the plurality of items of output color-component data (**Cyan and Magenta**) are decided based upon quality of printing required (**Referring to the Fourth Embodiment, Figure 14 and**

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see Page 20, Paragraphs 0203 through 0240, the decision process for outputting cyan (Ct) and magenta (Mt) is base on color density of output image data ($Ct = C + C_{err}$ and $Mt = M + M_{err}$) and comparison with threshold data taken from Lookup Tables whereas the threshold data is a measurement or indication of the desired quality of the output image base on the output image pattern and said threshold data are the results of diligent experimentation with various output image patterns. Therefore, the decision to output cyan and magenta color components is dependent upon the desired quality of the image being outputted.)

Regarding Claim 5, *Yamada et al.* discloses the plurality of items of output color-component data are decided based upon characteristics of printing media (Page 20, Paragraph 0201 discloses characteristics of printing media as thin cyan ink, thick cyan ink, thin magenta ink, and thick magenta ink. Furthermore, it discloses decision parameters in Paragraph 0218, 0221, 0233, and 0236 for deciding which characteristics of printing media should be applied to Ct and Mt. To the examiner, the threshold data of LUT are the results of due experimentation with various output patterns to determine how best to produce the image of highest quality. The fact is, such experimentation would not be enabled if it does not consider every element that could result in outputting images of low quality. Therefore, since Yamada teaches application of thin and thick inks as result of a decision process by comparing Ct and/or Mt with threshold data, it is a fact that the experimentation that produce the Yamada threshold data comprised the consideration of how different characteristics of printing media can affect the quality of output image. In view of this fact, Yamada clearly discloses that the

decision is based upon characteristics of printing media, albeit via the comparison with the threshold data).

Regarding Claim 6, *Yamada et al.* discloses the plurality of items of output color-component data are decided based upon impact precision of an output dot pattern (**Referring to Figure 15, and Page 20, Paragraphs 0218, 0221, 0224, 0227, 0230, 0233, 0236, and 0239. The prior art teaches the application of thick or thin color ink is base on a strategic decision process where a pixel of interest is determined to be printed with thick ink if the color density meets the bounds of certain thresholds and it is determined to be printed with thin ink if the color density meets the bounds of another set of thresholds in order to print an image that would commensurate with image pattern of highest quality as demonstrated by what is shown on Figure 15).**

Regarding Claims 8 and 9, *Yamada et al.* discloses a control program for causing a computer to execute the image processing method (**Figure 2, MCU 3001 having a control program execution function at Page 7, Paragraph 0116**) and a computer readable medium on which the program set forth has been recorded (**Figure 2, ROM 3004 and see Page 7, Paragraph 0117**).

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. Claim 3 is rejected under 35 USC 103 (a) as being unpatentable over the combined teachings of *Yamada et al. (US 20020097456 A1)* and *Ikeda (JP 11-055535 A)*.

The Applicant admitted applicant's own invention, *Ikeda (JP 11-055535 A)* as prior art and set forth in the disclosure a proper English translation of inventions borrowed from *Ikeda (JP 11-055535 A)*. Therefore, the admitted prior art section of applicant's own disclosure of preferred embodiment will be used in conjunction with the JPO machine translation of *Ikeda (JP 11-055535 A)*. A proper English translation of *Ikeda (JP 11-055535 A)* will be available for the next office action.

Regarding Claim 3, *Yamada et al. (US 20020097456 A1)* teaches every element as set forth in Claim 1. However, *Yamada et al. (US 20020097456 A1)* does not teach the steps of Claim 3. *Ikeda (JP 11-055535 A)* teaches the steps not taught by *Yamada et al. (US 20020097456 A1)*.

Ikeda (JP 11-055535 A) discloses adding error data to the plurality of items of color-component data and adopting the sum as error correction data (Paragraph 0069, the sum or error correction data being $E(x,y) = 1/16 * E(x-l,y-l) + 5/16 * E(x,y-l) + 2/16 * E(x+l,y-l) + 8/16 * E(x-l,y)$ as well as applicant's own disclosure on Page 29, lines 4-9).

Ikeda (JP 11-055535 A) further discloses deciding the plurality of items of output color-component data based upon the error correction data (**Paragraph 0070 and mathematical formula 3 of Ikeda as well as applicant's own disclosure on Figure 11 and 16 as well as Page 29, lines 17-18, $CL = 1/16 * E(x-l,y-l) + 5/16 * E(x,y-l) + 2/16 * E(x+l,y-l)$ whereas CL constitutes an essential part of determining IPLC since $IPLC = C_i + C_P + C_L$ whereas IPLC is critical in determining output color-component data as shown in Fig 16 of applicant's disclosure. Refer to Paragraph 0051-0053, Drawings 2 and Drawing 5 of Ikeda for the same disclosure.)**

Ikeda (JP 11-055535 A) further discloses calculating the difference between the plurality of output color-component items decided and the error correction data and adopting the difference as the error data (**Paragraph 0067, Mathematical Formula 2 of Ikeda as well as applicant's own admitted prior art disclosure on Page 27, lines 24-26).**

Therefore, it would've been obvious to one ordinarily skilled in the art at the time of applicant's invention to use the color diffusion technique as suggested by *Ikeda*, with the Halftoning Unit 34 of *Yamada*, to improve the color reproducibility of an entire output image without increasing the processing load in the image processor that obtains binary image data used for an output device based on multi-value input image data (*Abstract of Ikeda (JP 11-055535 A)*).

Conclusion

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure: US 5070413 A, US 5436736 A, US 5838885 A, US 5949965 A, US 5973803 A, US 6057933 A, US 6721063 B1.
13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian P. Werner whose telephone number is 571-272-7401 and Richard Z. Zhu whose telephone number is 571-270-1587. The examiners can normally be reached on M-F, 8:00 - 4:30.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

RZZ
4/24/2007



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